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EXAMINER	
GREEN, TRACIE Y	

ART UNIT	PAPER NUMBER
2879	

NOTIFICATION DATE	DELIVERY MODE
10/15/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	**Application No.** 10/594,249	**Applicant(s)** SAITO ET AL.	
	Examiner TRACIE GREEN	**Art Unit** 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 8-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 8-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/05/2010 and 06/10/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Receipt is acknowledged of applicant's response filed 08/06/2010. Claims 4-7 cancelled by applicant. Claims 1-3 and 8-18 are pending and an action on the merits is as follows.

Claim Rejections - 35 USC 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-2 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 5,998,925) in view of Kelsey Jr. (US 2002/0158267 A1).

Regarding claim 1, Shimizu et al. (Shimizu, hereafter) teaches (Figures 2, 6 and 16-23) a light-emitting device comprising (100): a semiconductor excitation light source (102) emitting blue-violet light (Column 6, lines 30-35) *(prior art teaches range which includes uv and blue light*), and a solid material illuminant (101) (column 8,lines4 3-50) that is made up of a medium that transmits the blue-violet light with low loss and an absorbent for absorbing (column 10, lines 15-20) said blue-violet light, the absorbent containing Sm of 0.01 to 10 mol% (column 13, lines 15-20) (*examiner prior art teaches*

that the sm content should be between .0003-.08; which not only adds in absorption but improves the temperature characteristic of the device) wherein said solid material illuminant radiates light by inner shell transition of the Sm contained in the absorbent absorbing the blue-violet light;

Shimizu is silent regarding said solid material illuminant medium is selected from the group consisting of GaN, AlN, InGaN, InAlN, InGaAlN, Si_3N_4, GaNP, AlNP, InGaNP, InAlNP, InGaAlNP, GaNAs, AlNAs, InGaNAs, InAlNAs, InGaAlNAs, GaNAsP, AlNAsP, InGaNAsP, InAlNAsP, InGaAlNAsP.

In the field of endeavor of display devices, Kelsey Jr. teaches said solid material illuminant medium is selected from the group consisting of GaN, AlN, InGaN, InAlN, InGaAlN, Si_3N_4, GaNP, AlNP, InGaNP, InAlNP, InGaAlNP, GaNAs, AlNAs, InGaNAs, InAlNAs, InGaAlNAs, GaNAsP, AlNAsP, InGaNAsP, InAlNAsP, InGaAlNAsP (¶18) in order to provide a luminescent powder than can be used beyond thin-film technology and for a wider range of displays (¶6, lines 5-7)

Therefore one of ordinary skill in the art at the time of the invention could modify the device of Shimizu wherein said solid material illuminant medium is selected from the group consisting of GaN, AlN, InGaN, InAlN, InGaAlN, Si_3N_4, GaNP, AlNP, InGaNP, InAlNP, InGaAlNP, GaNAs, AlNAs, InGaNAs, InAlNAs, InGaAlNAs, GaNAsP, AlNAsP, InGaNAsP, InAlNAsP, InGaAlNAsP in order to provide a luminescent powder than can be used beyond thin-film technology and for a wider range of displays as taught by Kelsey Jr.

Regarding claims 2, Shimizu teaches wherein said blue-violet light has a peak wavelength in the range of 398 to 412 urn (column 6, lines 30-35) (*Examiner note: prior art reference teaches the range of 400-530 nm which includes a portion of the claimed range)*

Regarding claim 12, Shimizu et al. (Shimizu, hereafter) teaches (Figures 2, 6 and 16-23) a light-emitting device comprising (100): a semiconductor excitation light source (102) emitting blue-violet light (Column 6, lines 30-35) *(prior art teaches range which includes uv and blue light*), and a solid material illuminant (101) (column 8,lines4 3-50) that is made up of a medium that transmits the blue-violet light with low loss and an absorbent for absorbing (column 10, lines 15-20) said blue-violet light (*Examiner note: the examiner notes the solid material illuminant is a phosphor material which is activated by a rare earth element, by activating with a particular rare earth element enhancing absorption an the luminance characteristics of the material, as such examiner has take "the absorbent" to be the activator for the phosphor and a separate compound)* the absorbent containing Sm of 0.01 to 10 mol% (column 13, lines 15-20) (*examiner prior: art teaches that the sm content should be between .0003-.08; which not only adds in absorption but improves the temperature characteristic of the device)* wherein said solid material illuminant radiates light by inner shell transition of the Sm contained in the absorbent absorbing the blue-violet light Shimizu is silent regarding wherein said solid material illuminant medium contains at least one of nitrides of Ga, In, and Al.

In the same field of solid state devices, Kelsey, JR. teaches a rare earth nitride wherein said solid material illuminant medium contains at least one of nitrides of Ga, In, and Al (¶ 15) in order to provide a device that is highly efficient electroluminescent emitters (abstract).

Therefore one of ordinary skill in the art at the time of the invention could modify the display of Shimizu wherein teaches a rare earth nitride wherein said solid material illuminant medium contains at least one of nitrides of Ga, In, and Al in order to provide a device that is highly efficient electroluminescent emitters as taught by Kelsey, Jr.

Regarding claim 13, Shimizu teaches wherein said blue-violet light has a peak wavelength in the range of 398 to 412 nm (column 6, lines 30-35) (*Examiner note: prior art reference teaches the range of 400-530 nm which includes a portion of the claimed range)*

4. Claims 3 , 11, 14-15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 5,998,925) in view of Kelsey Jr. (US 2002/0158267 A1) as applied to claims 1 and 12, and in further view of Henrichs (US 6,625,195 B1).

Regarding claims 3 and 11, Shimizu as modified by Kelsey Jr. teaches the light-emitting device set forth above (see claim rejection 1). Shimizu as modified by Kelsey Jr. is silent regarding wherein said a semiconductor laser device having a narrow spectral line width of lasing (claim 3) with an active layer of InGaN semiconductor (claim 11).

In the same field of endeavor of light-emitting devices, Henrichs teaches wherein said is a semiconductor laser device having a narrow spectral line width of lasing (column 2, lines 45-48) with an active layer of InGaN semiconductor (column 2, lines 28-30) in order to provide a device with improved current correction that allows for beam coherence and laser beam divergence (column 2, lines 10-15).

Therefore one of ordinary skill in the art at the time of the invention could further modify the light emitting device of Shimizu wherein said semiconductor excitation light source emitting blue-violet light is a semiconductor laser having a narrow spectral line width of lasing with an active layer of InGaN semiconductor in order to provide a device with improved current correction that allows for beam coherence and laser beam divergence as taught by Henrichs.

Regarding claims 14-15, Shimizu as modified by Kelsey Jr. teaches the light-emitting device set forth above (see claim rejections 1 and 12). Shimizu as modified by Kelsey Jr. is silent regarding wherein said a semiconductor laser device having a narrow spectral line width of lasing (claim 3) with an active layer of InGaN semiconductor (claim 11).

In the same field of endeavor of light-emitting devices, Henrichs teaches wherein said is a semiconductor laser device having a narrow spectral line width of lasing (column 2, lines 45-48) with an active layer of InGaN semiconductor (column 2, lines 28-30) in order to provide a device with improved current correction that allows for beam coherence and laser beam divergence (column 2, lines 10-15).

Therefore one of ordinary skill in the art at the time of the invention could further modify the light emitting device of Shimizu wherein said semiconductor excitation light source emitting blue-violet light is a semiconductor laser having a narrow spectral line width of lasing with an active layer of InGaN semiconductor in order to provide a device with improved current correction that allows for beam coherence and laser beam divergence as taught by Henrichs.

Regarding claim 18, Shimizu teaches wherein said red phosphor contains at least either Sm or Eu (Column 12, lines 60-65 and column 13, lines 5-14).

5. Claim 8 , 10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 5,998,925) in view of Kelsey Jr. (US 2002/0158267 A1) as applied to claims 1 and 12, and in further view of Cheetham et al. (US 2005/0077499 A1).

Regarding claim 8, Shimizu as modified by Kelsey Jr. teaches the light-emitting device set forth above (see claim rejection 1). Shimizu teaches wherein the solid illuminant can comprise a mixture of two or more materials (Column 19, lines 30-35). Shimizu as modified by Kelsey Jr. is silent regarding wherein said solid material illuminant contains a red phosphor having a peak wavelength in the range of 600 to 670 n , a green phosphor having a peak wavelength in the range of 500 to 550 nm and a blue phosphor having a peak wavelength in the range of 450 to 480 nm.

In the same field of endeavor of display devices Cheetham et al. teaches wherein said solid material illuminant contains a red phosphor having a peak wavelength in the range of 600 to 670 nm (Paragraph 20, line 5) (*examiner note: prior art reveals 580 to*

700 for red), a green phosphor having a peak wavelength in the range of 500 to 550 nm (Paragraph 20, line 4) (*examiner note: prior art reveals 500-580 for green)* and a blue phosphor having a peak wavelength in the range of 450 to 480 nm (Paragraph 20, line 5) (*examiner note: prior art reveals 400 to 500 for blue)* in order to effectively capture emission from GAN-based emission over a wide wavelengths thus increasing the luminous efficiency of the device (¶5).

Therefore one of ordinary skill in the art at the time of the invention could modify the device of Shimizu wherein said solid material illuminant contains a red phosphor having a peak wavelength in the range of 600 to 670 n , a green phosphor having a peak wavelength in the range of 500 to 550 nm and a blue phosphor having a peak wavelength in the range of 450 to 480 nm *)* in order to effectively capture emission from GAN-based emission over a wide wavelengths thus increasing the luminous efficiency of the device as taught by Cheetham et al.

Regarding claim 10, Shimizu teaches wherein said red phosphor contains at least either Sm or Eu (Column 12, lines 60-65 and column 13, lines 5-14).

Regarding claim 16, Shimizu as modified by Kelsey Jr. teaches the light-emitting device set forth above (see claim rejection 1). Shimizu teaches wherein the solid illuminant can comprise a mixture of two or more materials (Column 19, lines 30-35). Shimizu as modified by Kelsey Jr. is silent regarding wherein said solid material illuminant contains a red phosphor having a peak wavelength in the range of 600 to 670 n , a green phosphor having a peak wavelength in the range of 500 to 550 nm and a blue phosphor having a peak wavelength in the range of 450 to 480 nm.

In the same field of endeavor of display devices Cheetham et al. teaches wherein said solid material illuminant contains a red phosphor having a peak wavelength in the range of 600 to 670 nm (Paragraph 20, line 5) (*examiner note: prior art reveals 580 to 700 for red)*, a green phosphor having a peak wavelength in the range of 500 to 550 nm (Paragraph 20, line 4) (*examiner note: prior art reveals 500-580 for green)* and a blue phosphor having a peak wavelength in the range of 450 to 480 nm (Paragraph 20, line 5) (*examiner note: prior art reveals 400 to 500 for blue)* in order to effectively capture emission from GAN-based emission over a wide wavelengths thus increasing the luminous efficiency of the device (¶5).

Therefore one of ordinary skill in the art at the time of the invention could modify the device of Shimizu wherein said solid material illuminant contains a red phosphor having a peak wavelength in the range of 600 to 670 n , a green phosphor having a peak wavelength in the range of 500 to 550 nm and a blue phosphor having a peak wavelength in the range of 450 to 480 nm *)* in order to effectively capture emission from GAN-based emission over a wide wavelengths thus increasing the luminous efficiency of the device as taught by Cheetham et al.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 5,998,925) in view of Kelsey Jr. (US 2002/0158267 A1) as applied to claims 1 and 12, in view of Cheetham et al. (US 2005/0077499 A1) as applied to claim 8, 10, and in further view of Juestel et al. (US Patent 6,084,250).

Shimizu as modified by Kelsey Jr. and Cheetham et al. teaches the light-emitting device set forth above (see rejection claim 8). Shimizu teaches where two or more

phosphors are contained in the mixture and contain rare earth elements (Column 19, lines 30-35)

Shimizu as modified by Kelsey Jr. and Cheetham et al. is silent concerning the red , the blue and the green phosphor each has rare earth elements.

In the same field of endeavor of light-emitting devices, Juestel teaches wherein said red phosphor (for example, YVO_4:Eu), said green phosphor (for example, BAM: Eu activated) and said blue phosphor (for example, BAM: Eu activated) each contain rare earth elements (Column 4, table 1) in order to provide a device with high color rendering to display light efficient and intense image (Column 1, lines 54-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify light-emitting device of Shimizu wherein green, red and blue phosphors each contain a rare earth element, but is silent concerning all the phosphors, red green and blue have rare earth elements in order to provide a device with high color rendering to display light efficient and intense image as taught by Juestel et al.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 5,998,925) in view of Kelsey Jr. (US 2002/0158267 A1), as applied to claim 12, in view of Henrichs (US 6,625,195 B1) as applied to claims 14 and 15, and in further view of Juestel et al. (US Patent 6,084,250).

Shimizu as modified by Kelsey et al. and Henrichs teaches the light-emitting device set forth above (see rejection claim 15). Shimizu teaches where two or more

phosphors are contained in the mixture and contain rare earth elements (Column 19, lines 30-35)

Shimizu as modified by Kelsey et al. and Henrichs is silent concerning the red, the blue and the green phosphor each has rare earth elements.

In the same field of endeavor of light-emitting devices, Juestel teaches wherein said red phosphor (for example, YVO_4:Eu), said green phosphor (for example, BAM: Eu activated) and said blue phosphor (for example, BAM: Eu activated) each contain rare earth elements (Column 4, table 1) in order to provide a device with high color rendering to display light efficient and intense image (Column 1, lines 54-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify light-emitting device of Shimizu wherein green, red and blue phosphors each contain a rare earth element in order to provide a device with high color rendering to display light efficient and intense image as taught by Juestel et al.

Response to Arguments

8. Applicant's arguments with respect to claims1-2 have been considered but are moot in view of the new ground(s) of rejection. Specifically, the applicant removed ZNSe and ZnSSe from the Markush claim to overcome the Yamada reference; thus a new rejection was applied and arguments concerning the Yamada reference are rendered moot.

9. Applicant's arguments filed 08/06/2010, concerning claims 12 and 13 have been fully considered but they are not persuasive Specifically, on page 4 of remarks,

applicant recites the following " Thus, the rationale offered at page 8 of the outstanding Action to support the rejection is noted to be improper under MPEP § 706.020) because the examiner has failed to identify "the proposed modification of the applied reference(s)" as mandated here. In this regard, it is not clear if it is being suggested that the artisan "could," if the whim struck him, replace the Shimizu taught resin coating 101 or coating material 201 (that contain the phosphor that can contain Sm of the content claimed".

The examiner respectfully disagrees with the applicant specifically for the applicant states that the rejection is improper because "failed to propose the modification. This allegation is incorrect, because as recited in the modification "wherein said solid material illuminant medium contains at least one of nitrides of Ga, In, and Al" the motivation " in order to provide a device that is highly efficient electroluminescent emitters" ; both of which are taught by the Kelsey reference.

To address the applicant's assertion that the resin coating containing the phosphor was ignored by the examiner; the applicant's attention is first drawn to claims 1 and 2, the requirement that no resin is present, is not stated in the claims anywhere. Furthermore, the applicant's attention is drawn to page 10, lines 20-28 of the applicant's disclosure, a portion is recited here "The illuminant according to the present invention may alternatively be prepared by employing organic resin containing at least any material selected from epoxy resin, silicon resin, polycarbonate resin and acrylic resin as the medium in place of the aforementioned inorganic solid material. When organic resin is employed as the medium, an illuminant excellent in dispersibility of the said Sm

light absorbent (and a phosphor) and excellent in workability can advantageously be obtained." Clearly, the applicant is familiar with the resin being mixed with the phosphor to provide the required illuminant of the claimed device. Applicant's arguments directly contradict the applicant's disclosure. Furthermore, the examiner notes, that throughout the disclosure the applicant disperses the illuminant in a medium but does not disclose what the medium entails. The examiner believes the Shimizu reference and the Kelsey Jr. reference along with the other secondary references renders the device as claimed by the applicant to be obvious and the rejections are proper.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRACIE GREEN whose telephone number is (571)270-3104. The examiner can normally be reached on Mon-Thurs 7:00am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Tracie Green/
Examiner, Art Unit 2879

/Sikha Roy/
Primary Examiner, Art Unit 2879